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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,421	12/31/2003	Yan Zhou	75622P006401	4633
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DAVIS & ASSOCIATES P.O. BOX 1093 DRIPPING SPRINGS, TX 78620			EXAMINER SINGH, RAMNANDAN P	
			ART UNIT	PAPER NUMBER
			2614	

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/750,421

Applicant(s)

ZHOU, YAN

Examiner

Ramnandan Singh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-22 is/are rejected.
- 7) ☒ Claim(s) 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>Jan. 12, 2006</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on Jan. 12, 2006 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

2. Claims 6 and 8 are objected to because of the following informalities:

Claim 6 recites the limitation "downstream data signal to **the second drive**" in line 3. This is in error. Replace the term "the second driver" with the term "the first driver". Further, claim 8 recites the limitation " metering signal provided to **the second driver**" in line 3. This is in error. Replace the term "the second driver" with the term "the first driver".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1-7, 10-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ayoub et al [US 6,674,845 B2] in view of Anderson et al [US [US 6,990,191 B2] and further in view of Caine et al [US 6,735,302 B1].

Regarding claim 1, Ayoub et al teach a subscriber line interface circuit (SLIC)

apparatus shown in Fig. 1 for connecting broadband voice and data signals to telephone systems, comprising:

- a first driver (112) in a non-voiceband range;
- a second driver (116) in a voiceband range onto the subscriber line; and
- receiver circuitry coupled to provide an upstream data signal (108) and an upstream voice signal (103) from an upstream signal carried by the subscriber line [Fig. 1; col. 1, line 52 to col. 2, line 9; col. 2, line 61 to col. 4, line 13; col. 4, lines 60-64].

Further, regarding downstream data signals and downstream voice signals, although Aypub et al teach a generic system architecture of the SLIC comprising drivers 103, 108, 112, and 116 [Fig. 1; col. 3, lines 11-113; col. 3, lines 28-30]; it would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the SLIC architecture further in order to accommodate any configurations involving upstream and downstream subject to circuit, system and design constraints.

Further, Ayoub et al do not teach a metering signal onto a subscriber line.

Anderson et al teach a metering signal onto a subscriber line [Fig. 2; col. 5, lines 18-45; col. 7, lines 42-52].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Anderson et al with Ayoub et al in order to provide a metering signal to continuously notify a customer of telephone charges, etc.

Further, the combination of Ayoub et al and Anderson et al does not teach having the first driver and the receive circuitry on a same first integrated circuit die.

Cane et al teach having a SLIC, as shown in Figs. 1-2, on an integrated circuit die [col. 3, lines 10-33; col. 11, lines 5-19].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Cane et al with Ayoub et al and Anderson et al in order to reduce the size of the SLIC and thereby realize a lower cost part [Cane et al; col. 11, lines 12-19].

Claim 12 is essentially similar to claim 1 and is rejected for the reasons stated above.

Regarding claim 2, Anderson et al further teach the apparatus, comprising:

an upstream low pass filter providing a low pass filtered upstream signal from the DCIN terminal 265 as an upstream voice signal, wherein the upstream low pass filter embedded within the second driver resides on the first integrated circuit [Figs. 1-2; col. 3, line 64 to col. 4, line 46].

Claim 16 is essentially similar to claim 2 and is rejected for the reasons stated above.

Regarding claims 3 and 17, the limitations are shown above.

Regarding claim 4, Anderson et al further teach the apparatus, wherein the voiceband range is from 0 Hz to 4 kHz [col. 2, lines 15-19].

Claim 13 is essentially similar to claim 4 and is rejected for the reasons stated above.

Regarding claim 5, Anderson et al further teach the apparatus, comprising:
an upstream high pass filter providing a high pass filtered upstream signal (370) as an upstream voice signal, wherein the upstream high pass filter embedded within the second driver resides on the first integrated circuit [Fig. 2; col. 3. line 65 to col. 4, line 18; col. 8, lines 42-56].

Regarding claim 6, the limitations are shown above.

Regarding claim 7, Anderson et al further teach the apparatus, comprising: a metering signal cancellation circuit residing on the first integrated circuit die, wherein the metering signal cancellation circuit substantially cancels any metering signal present in

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the upstream voice signal using a single-pole low-pass filter [col. 6, lines 4-21; col. 7, lines 42-63].

Claim 18 is essentially similar to claim 7 and is rejected for the reasons stated above.

Regarding claim 10, Anderson et al further teach the apparatus wherein a lower bound of the non-voiceband range is greater than 16 kHz [col. 2, lines 19-28].

Claim 14 is essentially similar to claim 10 and is rejected for the reasons stated above.

Regarding claim 11, Anderson et al further teach the apparatus wherein the downstream data signal is a discrete multi-tone encoded signal (i.e. ADSL signal) [col. 2, lines 19-27; col. 4, lines 19-33].

Claim 15 is essentially similar to claim 11 and is rejected for the reasons stated above.

Regarding claim 20, Ayoub et al further teach the apparatus, wherein the receiver circuitry further comprises a first upstream driver coupled to receive the

upstream signal [Fig. 1].

5. Claims 8 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ayoub et al, Anderson et al and Caine et al as applied to claims 7 and 18 respectively above, and further in view of Booth et al [US 5,835,533].

Regarding claim 8, although Anderson et al teach a metering signal cancellation circuit using a single-pole low pass filter [col. 6, lines 4-21], they do not teach expressly employing a finite-impulse response (FIR) filter to cancel the metering signal.

Booth et al teach a metering signal cancellation circuit (i.e. adaptive filter) shown in Fig. 7, wherein the metering signal cancellation circuit substantially cancels any metering signal present in the upstream voice signal and the metering signal cancellation circuit further comprises a finite impulse response filter responsive to the metering signal provided to the driver circuitry [Fig. 7; col. 1, lines 11-49; col. 7, lines 21-55].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Booth et al with the combination of Ayoub et al and Anderson et al in order to accommodate signals in the upstream direction so that the network can then serve for communication metering signals [Booth et al; col. 1, lines 29-35].

Claim 19 is essentially similar to claim 8 and is rejected for the reasons stated above.

6. Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ayoub et al, Anderson et al as and Caine et al applied to claim 20 above, and further in view of Gambuzza [US 6,226,331 B1].

Regarding claim 21, the combination of Ayoub et al, Anderson et al as and Caine et al does not teach expressly the apparatus, wherein the first upstream driver is capacitor-coupled to the subscriber line.

Gambuzza teaches the apparatus shown in Fig. 4, wherein the first upstream driver is capacitor-coupled to the subscriber line [Fig. 4; col. 7, line 15 to col. 8, line 7]. It is nevertheless a teaching to one of ordinary skill in the art.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Gambuzza with the combination of Ayoub et al, Anderson et al as and Caine et al in order to provide galvanic isolation between data communications equipment and a digital subscriber line (DSL) [Gambuzza; col. 1, lines 19-24].

Regarding claim 22, Gambuzza teaches the apparatus, wherein the first upstream driver (220) shown in Fig. 2 is transformer-coupled to the subscriber line [Fig.].

Allowable Subject Matter

7. Claim 9 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 9 recites the limitation, "the downstream data signal and the metering signal are weight coupled to the first driver wherein the weights permit varying the proportion of combination of the downstream data and metering signals". The prior art of record does not teach these limitations.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ramnandan Singh
Examiner
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A handwritten signature in black ink, appearing to be 'RNS' with a large, sweeping underline.